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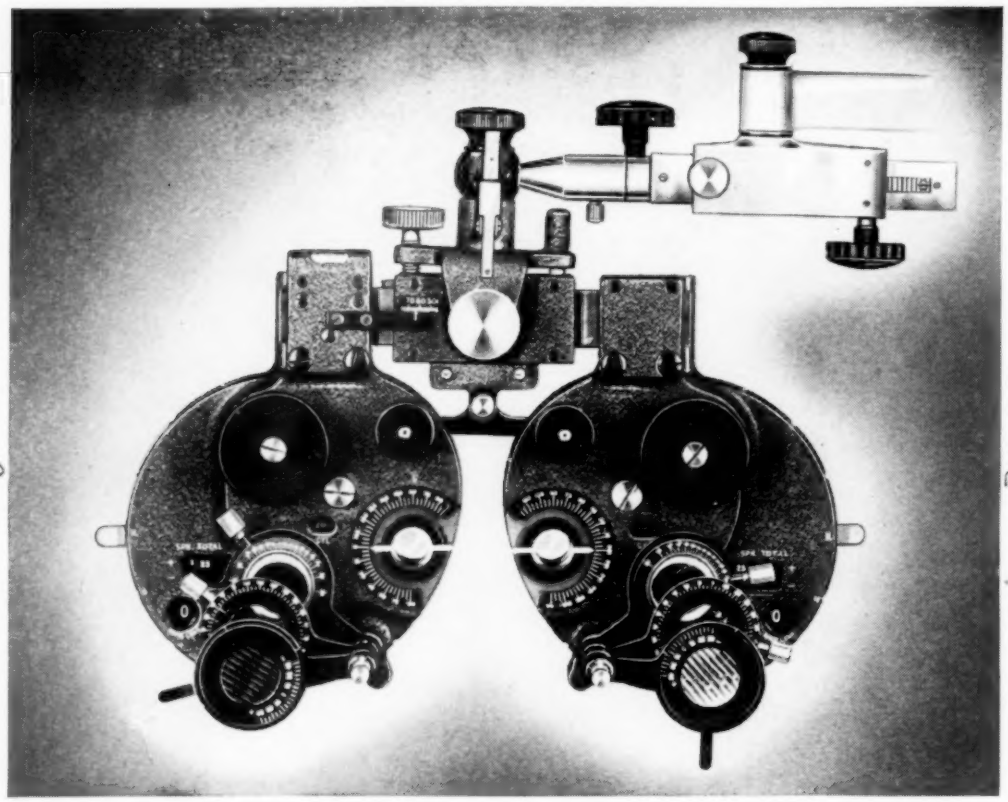

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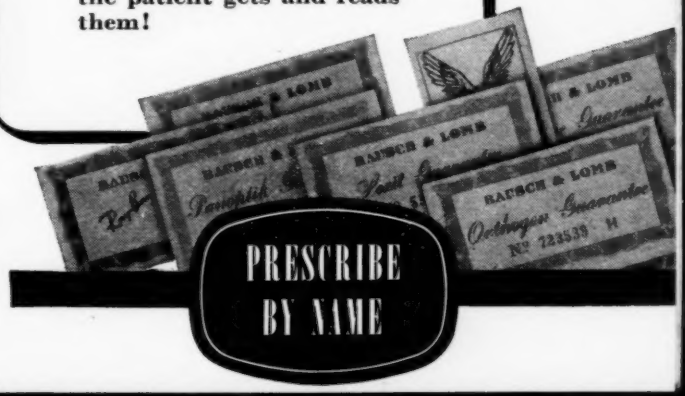

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AMERICAN JOURNAL OF OPTOMETRY

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THE SIGNIFICANCE OF JAVAL'S RULE*

H. G. Mote and G. A. Fry
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The variance of the cylindrical component of ophthalmic lenses acceptable clinically from the dioptric difference in curvature of the principal meridians of the anterior surface of the cornea, has given rise to much discussion. The value of the keratometer as a clinical instrument has frequently been belittled because of this variance.

After the invention of his keratometer about 1880, Javal[1] formulated a rule in an attempt to correlate the dioptric difference in curvature of the two principal meridians of the anterior surface of the cornea with the total astigmatism of the eye ascertained by subjective and skiascopic measurements.

The rule may be stated as follows:

Total astigmatism = K⌒P x (Keratometric astigmatism). K is a constant of .50 diopters against the rule[2] and P is a constant of 1.25. He qualified this formula by saying that neither the constant K nor P is definitely established and that a new factor expressing the function of age will probably need to be added. He suggested that a modification of his rule would probably be necessary after a study of many clinical cases. The constants K and P were necessary, he believed, because of the astigmatism of the crystalline lens. The constant K was designated as .50 D. against the rule as a result of Bull's research.[3] He measured sub-

*Submitted for publication August 16, 1939.

[1]E. Javal, Memoires d'Ophthalmometrie, 130 (1890).

[2]Astigmatism of the eye is classified into three general types, direct (or with the rule), inverse (or against the rule), and oblique. In direct astigmatism the vertical meridian of the cornea has the greater refracting power. In inverse astigmatism the horizontal meridian of the cornea has the greater refracting power. If the direction of the meridians differ from the horizontal and vertical, the astigmatism is classified as oblique.

[3]G. J. Bull, Memoires d'Ophthalmometrie (Edited by E. Javal), 437 (1890).

jectively the astigmatism of many subjects with spherical corneas and found an average of about .50 diopters against the rule acceptable in these cases.

In order to investigate the merits of Javal's rule in computing the cylindrical correction from keratometric findings, this rule was applied to 100 clinical cases (200 eyes). All these subjects have the two principal meridians of each eye at, or within 10° of, 180° and 90°. Sixty cases (120 eyes) are taken from the practice of Ryer and Hotaling of New York City and 40 cases (80 eyes) from the practice of the senior author. In view of the fact that no characteristic differences were found between the cases examined by Ryer and Hotaling, and the senior author, the cases have not been segregated in the following analysis.

In Figure 1, the findings for all the eyes are plotted with the keratometric astigmatism as abscissae and the subjective astigmatism as ordinates. The straight line A-B represents the cases which conform to the Javal rule. The crosses connected by the broken line C-D represent the average values of the subjective and keratometric astigmatism. These values were determined by grouping the eyes according to the amount of keratometric astigmatism as shown in Table I and computing the average of subjective and keratometric astigmatism of the eyes included in each group. The average value of subjective astigmatism is somewhat less than expected according to Javal's rule except in eyes with keratometric astigmatism against the rule and greater than 4.00 D. with the rule.

The distribution of the clinical cases in Figure 1 compares well with that found by Mason.[4] No cases were included in Mason's group, however, which manifested keratometric astigmatism greater than 3.00 with the rule.

Figure I shows that Javal's rule is an approximately correct formulation of the relation between the statistical averages of subjective and keratometric astigmatism. It would be still more satisfactory if the constant K were changed to .62 D. against the rule instead of .50 D. against the rule.

Regardless of how satisfactory Javal's rule may be when applied to statistical averages, it cannot be applied to individual cases for the purpose of computing a cylindrical correction from keratometric findings,

[4]F. L. Mason, Principles of Optometry, Part I, 381 (1936).

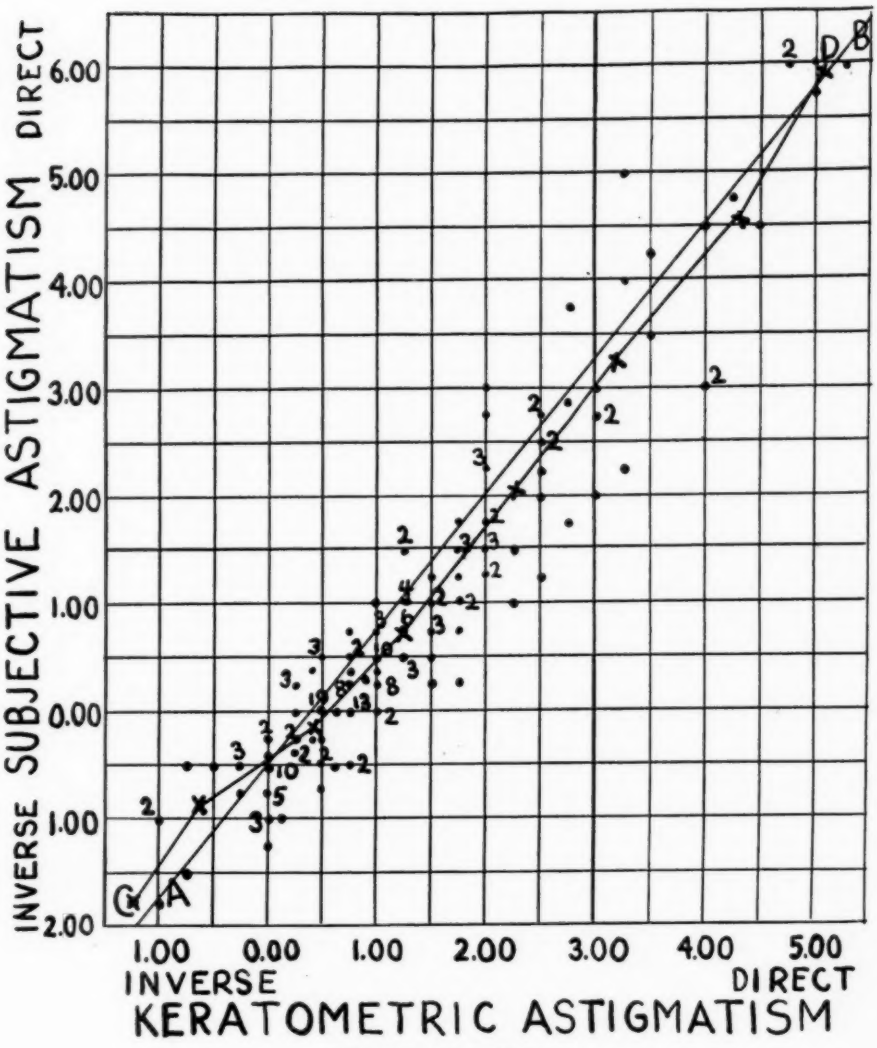

FIGURE LEGEND

Fig. 1. The Relation of Subjective to Keratometric Astigmatism. Two hundred eyes are represented on the graph. When more than one eye falls at the same point, the number is indicated above or to one side of the point. The crosses represent statistical averages of the groups classified in Table I.

because when this is done, errors as large as 1.50 diopters can be expected to occur. Furthermore, the rule is meaningless when used for the purpose of comparing the subjective correction with the keratometric findings, because when the rule fails to work, it does not help to isolate the factors responsible for the discrepancy. For example, the role played

Table I. Average Values of Keratometric and Subjective Astigmatism for Subjects Grouped According to Various Values of Keratometric Astigmatism.

Grouping of Subjects According to Keratometric Astigmatism	No. of Eyes	Average Value of Keratometric Astigmatism	Average Value of Subjective Astigmatism
2.00—1.01x 90	1	1.25 Inverse	1.75 Inverse
1.00— .01x 90	10	.60 Inverse	.85 Inverse
0 — .99x180	89	.43 Direct	.14 Inverse
1.00—1.99x180	57	1.25 Direct	.71 Direct
2.00—2.99x180	24	2.25 Direct	2.07 Direct
3.00—3.99x180	9	3.19 Direct	3.27 Direct
4.00—4.99x180	7	4.32 Direct	4.54 Direct
5.00—5.99x180	3	5.08 Direct	5.92 Direct

by the sphere in changing the effective power of the cylinder at the cornea is not represented in Javal's formula, and hence there is no provision for making an allowance for the difference between the nominal power of a cylindrical test lens and its effective power at the cornea.

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CASE REPORT: HYSTERICAL AMBLYOPIA COMBINED WITH MONOCULAR DIVERGENT SQUINT*

Robert J. Beitel, Jr., Ph.D.
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The accumulating literature on abnormal behavior contains an extensive body of facts which afford one a conception of the vast and varied range and quality of human behavior. Behavior abnormalities, when considered as deviations from the normal in the direction of disease, appear to be phenomena characterized chiefly by their aspect of disintegratedness when contrasted with normal, coordinated behavior. The forms which this disintegration assumes have become the topics or classifications of abnormal behavior.

It is not the purpose of this paper to discuss in any way the subject of abnormal behavior, but rather, to present an isolated case which may be considered to be a comparatively rare manifestation of a serious behavior disorder known as hysteria.

Hysteria may be conceived to be a pathological state manifested by disorders which it is possible to reproduce exactly by suggestion in certain subjects and which can be made to disappear by the influence of counter-suggestion, or persuasion, alone. Usually the symptom serves some useful end in the patient's objective adjustment or in his subjective life. [1]

These features and others characteristic of hysterical states may be readily discerned in the following report.

Case, E. V.—girl, aged 13½ years.

The patient was referred to the writer, July 6, 1935, during the writer's vacation in Pennsylvania by the school nurse in the patient's home town. The following information was supplied: E. V. had just failed the 4th grade in school, her parents had been notified each year

*An abridgment of the material presented before the American Academy of Optometry at Richmond, Va., June 23, 1938.

for several years previously to have the child's eyes examined; school acuity tests showed her to be *"blind"* in the right eye.

At the time the writer saw E. V., she was brought to the office by her aunt who exhibited a marked divergent squint. The aunt, upon questioning, supplied the following information: E. V.'s parents could not get along, disliked the child and would pay no attention to her; she (the aunt) and the child's grandmother (who also had a divergent squint) were the only members of the family sympathetic to the child.

E. V., although 13½ years of age, appeared to be undernourished, retarded in development (appeared to be about 10 years of age), untidy and presented a pathetic, "hang-dog" expression. At the beginning of the examination she became mildly hysterical, wept profusely, and offered resistance to any attempt to examine her. It was only after the writer demonstrated the use of each instrument (ophthalmoscope, phoroptor, retinoscope, ophthalmometer) upon himself first that the child's confidence was gained sufficiently to permit the continuance of the examination.

The examination disclosed the following information:

Naked visual acuity O.S. 20/20, O.D. Fingers at 2 feet, *and*, upon persuasion, 20/200. Monocular divergent squint of the right eye of approximately 15° deviation.

External and ophthalmoscopic examination revealed no abnormality aside from the squint. Rotations full, complete, and smooth.

Refraction, emmetropic in both eyes.

At this point, as a matter of routine, the writer placed a trial frame on the patient's face. The patient's response was striking, her entire facial expression changed, "lighted up" so to speak and she appeared, finally, to take an active interest in the proceedings. Taking the cue from this on the suspicion that the trial frame, resembling "glasses," served as the suggestion measure the writer spoke to E. V. as follows: "You have some trouble there in your eyes, and we can help you, *but* you will have to wear glasses. Now let us see just what kind you need." Lenses were then inserted in the frame, +0.25 D., —0.50 D., and plano. With each lens and with no lens (the lens having been "palmed," as it were) E. V. read 20/20 with each eye individually. Further ob-

servation disclosed that both eyes were *straight*. A hand stereoscope was given the child and with the Wells' series of cards, she demonstrated to the writer's satisfaction single binocular vision and stereopsis.

Again the point was stressed that her eyes would be all right but that she would have to wear glasses. This she happily consented to do.

Three days later when E. V. presented herself for her correction she presented an entirely different picture. She literally skipped in, shoulders back, head up, smiling, neat, wore a clean dress and greeted the writer with a friendly "Hello, Doctor." With her +0.25 D. O.U. correction she went home visually and ocularly normal.

As a sequel, May 16, 1938, almost three years later, the writer's father called at E. V.'s home and inquired as to her present condition. E. V., now 16½ years of age, replied that "she wore them about a year and then broke them and hasn't had any since; but that while she had them she got along 'good'." The following information was then obtained: E. V. again manifests the squint, is small and thin, does not appear older than 13, her mentality is low, she advanced to 5th grade after repeating 4th (while wearing her correction) and failed in 5th grade, repeating the year's work the following year. Her teacher reports that her actions in play are like those of a 1st grader, that she appears poorly coordinated physically, falls excessively while playing although she apparently enjoys such activity.

The grandmother and aunt do not understand why E. V. fails in school and insist that "she goes to school until she is 21."

Discussion:

The interesting and important feature of this case, aside from the characteristic symptomatology and effectiveness of the therapy, is the simulation of the divergent squint. Whether or not there was an hereditary predisposition to such a condition (manifest in both the aunt and grandmother, the child's best friends at home) is difficult to say. Nevertheless, its manifestation was primarily on a functional level.

The history and pertinent information revealing the poor sociological background, low intelligence, the child's desire for sympathy and her "escape," or "conversion of repressions," in the form of simulating the physically abnormal symptoms, together with her immediate response

to the therapeutic measure contained in the form of the suggestions afforded by a pair of glasses clearly describes the psychoneurotic syndrome.

DR. ROBERT J. BEITEL, JR.
BUREAU OF VISUAL SCIENCE
AMERICAN OPTICAL COMPANY
SOUTHBRIDGE, MASS.

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3. Hunter, W. S. Human Behavior. Univ. of Chicago Press, Chicago, 1928.
4. Janet, P. Major Symptoms of Hysteria, The MacMillan Co., 1907.

DISCUSSION

DR. KRASKIN: I have been wondering if this type of patient is not more common than we realize. Your use of suggested therapy was very effective and I do not wonder that you were impressed by the quick response and interest manifested by the patient. The identification with an aunt or some other member of the family is a very common phenomenon in most psychological cases and is used to gain attention. Usually the patient tries to identify himself with the particular person that they want the attention from. This has been proven by a preponderance of clinical evidence. Also, that if the parents of this particular patient were intelligent enough, they could be made to understand the situation and aid a great deal in the final adjustment.

DR. WHEELOCK: Did you make any perimetric study during your examination?

DR. BEITEL: Not in this particular case. However, it is a fact that restricted and even tubular fields can be demonstrated in cases of hysteria. The fact that her visual acuity reports were constantly varying made me suspicious.

DR. KRASKIN: The interesting thing in many of these cases is that you can actually prove the data. The physiological pattern for that particular pathology which they demonstrate. In recent years, the physiologist has come to the rescue of the psychologist and has proven a physiological basis for the phenomenon. Another point of interest is, that with the proper attitude and understanding, the practitioner can do much himself to help these patients to properly adjust themselves. Not that I am in agreement with lay analysis, not at all, but there are many such patients who can be benefited greatly by sympathetic understanding on the part of the examiner.

ASTIGMATISM: A CASE REPORT*

R. V. Anderson, M.D.
Louisville, Ky.

The following case report, dealing with astigmatism in rather high amounts, is of interest because the patient, who had driven a car for years, had never experienced any visual discomfort nor was he aware of his low acuity of vision until an effort was made during the present examination to improve his vision.

Patient, colored, male, age 28. No symptoms although somewhat doubtful of ability to see as well as others. Visual acuity 6/200 O.U. The findings of the entire examination were negative with the exception of a large amount of astigmatism which was corrected as follows:

O.D. +8.50 D. Cyl. axis 75
O.S. +9.00 D. Cyl. axis 105

This gave the patient the following visual acuity. O.D. 20/40. O.S. 20/60+. O.U. 20/32 ?. The patient has worn this correction, which is his first, for several months with comfort.

DR. R. V. ANDERSON
MELVIN PARK
LOUISVILLE, KY.

*Submitted for publication August 5, 1939.

UVEITIS SECONDARY TO FOCAL INFECTION: A CASE REPORT*

Charles I. Saks, D.O.S.
Syracuse, N. Y.

On July 14th, 1939, a salesman, Mr. E. W. H., aged 36, was referred to me. For one whole week previous to his visit he had been having dull pains in the left eye after sleeping about one-half hour, becoming severe and throbbing, shooting to the vertex cranii and the left side of the face. When sleeping in an upright position, the pains were relieved somewhat. The left ocular pains were dull and steady when morning came, disappearing gradually in a few hours. The identical symptoms were experienced while watching a movie, becoming so severe that he was compelled to leave the theatre. When he experienced the pains in the left eye, he had a feeling that he wanted to clear his throat. This latter symptom is probably caused through the oculocardiac reflex by way of the recurrent laryngeal nerve.

Two weeks previous to his visit to me he had a left upper canine extracted.

The results of my examination revealed that O.U.+0.50 was necessary for reading only.

I advised my patient to sleep with a lighted 7½ watt bulb [1] (this is the lowest wattage supplied by American Manufacturers). I further advised my patient not to go to movie shows until further notice.

After leaving my office this patient, without my knowledge, called on his dentist who then extracted a bicuspid adjacent to the extracted canine. He phoned me on July 17th that he no longer suffered the nocturnal symptoms even though he slept in a dark room, and that movies

* Submitted for Publication August 20, 1939.

[1] Refer to "An Optometric Means for the Control of Primary Glaucoma" in the July, 1939 issue, of The American Journal of Optometry.

no longer caused the symptoms described above. He reported back on August 16th that his symptoms disappeared entirely.

The diagnosis is evidently a uveitis of the left eye secondary to infected teeth.

It is to be noted that he suffered no pain whatever during the day. The above symptoms were experienced only when in darkness. It is to be further noted that no pain was felt in the region of the infected teeth.

This case appears to emphasize that symptoms of primary glaucoma may have their origin in a focal infection.

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Current Comments by Carel C. Koch
Editor, American Journal of Optometry

Optometrists will confer a favor by sending for this department items of news of general interest: such as relate to new instruments, clinical techniques, education, public health and optometric legislation.

A SECOND PROFESSIONAL EXAMINATION FOR OPTOMETRISTS

The proposal has been made that all optometrists now submit themselves for a second examination, to further prove their competency and fitness to do the eye examining work which they have already been licensed to do by the various states. Not only have optometrists been already licensed to do refractive eye work, but for nearly 40 years State Examining Boards in Optometry have been licensing optometrists only after making the candidates pass rigid written and clinical examinations to prove their qualifications to practice in this field. In fact, optometrists are the only group of eye specialists in America who have been, and are, required to come before official examining bodies before being permitted to practice on the eye.

Notwithstanding the already high standards of optometrical education, and despite the State Board examinations given the optometric graduate, the impertinent proposal is now made, that optometrists, hoping to further participate in certain proposed health programs, or who hope to justify their present high standing in their respective communities, submit themselves for a second examination, to thus again prove their qualifications to do ocular work.

After studying this proposal for more than 60 days, and after reading published comments and many letters from various leaders in optometry with reference to this matter, the writer is convinced that this proposal will do more to discredit the profession of optometry than has anything else in recent years. The writer does not believe this new move to be a deliberate attempt on the part of its author or authors to discredit our profession, but he does, nevertheless, believe the proposal as it pertains to the re-examination of licensed optometrists, to be, one of the most injurious acts to which optometry has been submitted. He further believes that the entire matter may be viewed as a serious blunder on the

part of the Educational Council of the American Optometric Association, and represents without question a new and all time high in careless thinking and hasty action on the part of the delegates to the last congress of that body.

Let us consider just a few of the many aspects of this subject. The proponents of this measure claim that optometrists, who pass this second examination, would thereby enhance their chances of participating in future public health programs. In the writer's judgment, this statement is nothing more or less than sheer nonsense, and is indicative of the loose and sloppy thinking which pervades the entire movement. The real facts of the matter are these: In future public health programs, optometrists will participate as eye examiners because, (1) they are the legally recognized eye specialists at law today, and (2) because any general program of public health, which attempts to satisfy the visual needs of all persons in the low income brackets, will require the services of all licensed optometrists and all licensed physicians, who are now voluntarily practicing as oculists. It is certainly safe to say that no state legislative program, to be set up in the future, intended to function in the field of public health, is going to require of those now doing visual work, further assurance of proficiency, than that now required by law in the several states.

The writer feels that this proposal, on the part of the Educational Council, is injurious to optometry. He contends that by making this proposal, optometry is discredited by those who make it, inasmuch as the proposal, by inference at least, questions the previous educational background of all optometrists in practice today, and also questions the value to the public of the examinations already given these optometrists by the many State Boards of Examiners in Optometry. If this proposal had come as an attack upon the profession by certain few oculists, who delight in this sort of thing, one could ignore it entirely, as being just another bit of evidence of the relationship which exists between certain small segments of the two professions. But such is not the case. This move, which certainly places in the hands of any enemies of optometry the finest sort of ammunition to use against us, emanates as far as the writer can gather, from the pen of a man who, while not an optometrist himself, has been permitted to sit at the inner councils of the profession.

The proposal is injurious to optometry because it permits a question to arise in the minds of lay persons as to the present technical qualifica-

tions of optometrists as eye examiners. The very fact that the proposal was made at all, will arouse in the minds of certain more or less dubious individuals the moot question, whether optometrists are as capable refractionists as they either seem to be—or claim to be. As is well known, about 93 per cent of all eye work done today by both optometrists and oculists is refractive work. Of this total, optometrists do approximately 70 per cent, and do it without criticism on the part of either the public or any professional group. In fact, this proposal of the Educational Council is the first time in years that the writer has seen any serious question raised as to the average optometrist's ability to examine eyes and prescribe correctly fitted glasses. Why, therefore, raise such an issue at this time? What is behind this move? Particularly when this comes, as it does, at a time when optometry and every other profession is attempting, and properly so, to place itself in a favorable position before the public, as being fully capable to properly undertake whatever work will be assigned to it, by those state authorities in charge of public health programs.

The writer would like to ask the members of the Educational Council, if other professional groups are now questioning the technical ability of their constituent members? For instance, is any other profession attempting to re-examine its individual practitioners? Are physicians setting up voluntary examining boards to re-examine physicians in the basic fundamentals of their calling? Are dentists now attempting to re-examine all dentists as to their ability to extract and fill teeth? Naturally not, and anyone making such absurd proposals would be ejected from their meetings in short order. Why, then, should anyone project such proposals before an optometric group?

To say that certain specialists in medicine do have voluntary boards which will examine a physician in one of the specialties, should he desire to take the examination, does not answer the question at all. It must be remembered, that no specialist in medicine was previously examined, as to his proficiency in his specialty, by his own official medical board. His only previous examination was a non-specific one, covering only general medical science—not at all necessarily dealing with the specialized services he now claims to offer to the public.

The oculist, for instance, was originally examined and licensed as a general practitioner of medicine. The examination, he was subjected to by his medical examining board, rarely touched the field of ocular work

in any way, and it certainly did not cover it in the slightest degree. When this general practitioner became an oculist, he did so by merely informing the public at large of the fact that he now intended to limit his practice to eye work or more frequently to eye, ear, nose and throat work. Nothing else was required of him at all—no further examination, nor additional graduate schooling, despite the well known fact that his own original training as a physician included no eye work worth mentioning. To be sure, the better oculists did acquire some degree of proper training in the refractive and ocular field, not previously given them in the undergraduate medical school. It is a fact, however, that somewhat less than one-fifth of the oculists in practice today have submitted themselves to a voluntary ophthalmological examining board which functions for the small group of oculists, in the eye field, as do the many statutory and compulsory optometry boards function for optometrists. The difference, however, is this—that only about 20 per cent of all present day oculists have bothered to take an examination to prove their proficiency in eye work, while during the same period, 100 per cent of all optometrists have taken examinations, to do this very thing, before their optometric boards.

In the face of these facts it seems strange, indeed, to many optometrists, including the writer, that anyone would make the proposal that a National Examining Board be formed to duplicate the fine work already being carried out by the various State Boards of Examiners in Optometry. That our profession continues to need specialized graduate educational work all agree. It has had this in the past, and should continue to support every sound effort to improve this in the future. Graduate education is needed in optometry as in every other profession, but the suggestion of creating a secondary voluntary examining body is no more in order in optometry than in other professions. The suggestion is both superfluous and charged with the probability of placing optometry under much needless fire.

THERE CAN BE NO LASTING ECONOMIC IMPROVEMENT AS THE RESULT OF WAR

As optometrists, we know that modern war is the creator of nothing that is good. The best that can be said of war is that it may be accepted as the lesser of two evils, when there is no other possible choice.

The war which has now opened cannot help but disturb most seriously the economic life of all nations. Not only those engaged as belligerents, but also those who may be able to keep out of the fighting itself. The longer the war lasts, the greater will be the disturbance, and the more intensified and prolonged will be its effects. The present war burst upon a world which had not fully recovered from the consequences of the last one, a fact which lends increased emphasis to this conclusion. Here in the states, we intend, if we can, to avoid entanglement in the actual conflict. Nevertheless, it behooves us all as optometrists to look ahead and take whatever necessary steps we can, to minimize as far as possible, the consequences of this new war.

To a neutral country, such as the United States the war that has now begun, brings the necessity of huge unproductive expenditures exclusively for defense, which from a purely economic point of view are a waste of wealth. All that we as optometrists can do, is to assist, along with other groups of citizens, in seeing to it that the money is well spent and we get the safety we are attempting to buy. There are, however, three other considerations to which we as citizens of a neutral country should consider. In the first place, we are certain to be called upon by belligerents and in some instances by other neutral countries, for supplies of all kinds, and this demand will inevitably upset the normal process of production, causing a shift of effort from one branch to another. This shift tends to stimulate increased construction of plant capacity to satisfy the temporary abnormal demands. When these demands cease, as they do with the cessation of fighting, the industrial plants are left with the new facilities so constructed which become an increased burden upon not only the industry itself, but upon all people. Second, a long war leaves all concerned in it, in a state of mental and physical exhaustion, and last, a war of the kind now begun tends toward the further consolidation of power in the hands of few persons, thus limiting individual initiative. As optometrists, we are most concerned with this latter effect, as war stimulates bureaucracy and bureaucratic mass control of not only persons at large but also professional activities.

All of these things combined spell economic depression, the character, depth and duration of which will be in direct proportion to the length and violence of the armed struggle itself. These are facts which we, as optometrists, should keep in our minds at all times during the immediate future ahead of us. Whatever else the war may bring to us as

a neutral nation, it cannot bring to us real and lasting economic improvement. It cannot bring us improvement which we as American people could not have achieved in a far greater measure had there been no war. Only by treating the emergency now facing us as an essentially harmful thing can we hope to escape some of the ultimate evils that are inherent in it. There is at the present time, no room in optometry for anything but the utmost sobriety of thought.

DISTRIBUTING AGENCIES FOR PROTECTION GLASSES

While the 1939 protection glass season is over, it may be well to now pause and consider optometry's position in relation to the distribution of these aids to visual comfort. Obviously, as eye specialists, we have some interest in all forms of eye protectors, but the exact form which this interest should take is the point at issue. The writer contends that optometrists, as professional people, should be interested in sun or protection glasses from the supervisory side only. Optometrists should have an academic interest in this matter and not a commercial one. As eye specialists, we should be interested in the quality of the products used by our patients. We should also be acquainted with the absorption values of the different types of standard protection glasses, but at this point our interest in the matter should end.

The writer does not agree with Dr. Emil H. Arnold, who, in a recent article in the MICHIGAN OPTOMETRIST, suggests that optometrists themselves, dispense protection glasses. The point he makes is that many protection glasses now sold by various merchants are of such poor quality, that their use may possibly injure the eyes of the wearer. To correct this situation, he suggests that optometrists have in their offices quantities of first quality protection glasses and supply these to the patients as requested. Arnold admits that this type of "goings-on" would be rather commercial, but he pleads the point that in the interest of visual welfare. this commercial activity on the part of the optometrist might be overlooked. In this Arnold is mistaken.

The sale of ready made protection glasses by professional optometrists in their offices would rapidly undermine, in the eyes of their patients, the standing these men have as professional people. While, to be sure, some patients would buy this material from the optometrist, should he have it around, they would at the same time question his pro-

fessional ability and standing, because of his enlisting in this type of activity. In the writer's judgment, the ultimate loss of prestige to the optometrist himself, in these cases, would be infinitely greater than the probable injury a poor protection glass might inflict upon the patient, who picked one up at some bargain counter.

This leads also to the question of probable eye injury as the result of wearing a protection glass made in such a careless way as to contain pits in its surface, waves, bubbles and striae. While the writer has frequently read the statement that this practice is injurious, he has never seen a technical attempt made to verify the statement. If this practice is injurious, as many including Arnold claim, what part of the eye is injured? And in what way? Is the effect of this practice on the eyes permanent or is the effect only temporary? What are the symptoms of this injury and what sort of a prognosis might be made in cases so injured? These are questions which we as professional people should be able to answer. The writer's own experience in the matter leads him to believe that the short temporary use of poorly made protection glasses causes visual fatigue and asthenopia. A longer and more general use of the protection glass may cause an involvement of the ciliary muscle which may in time become permanent. If the writer is correct, it is thus evident, that the matter is a serious one and optometrists should be in a position to present factual information to their patients relative to the harm which may result from the use of poorly made protection glasses. The optometrist should also be in position to assist his patients after giving them this advice, but not in the manner suggested by Arnold.

From the standpoint of the professional optometrist, it is obvious, that he cannot himself dispense protection glasses to his patients. It is also obvious that some of his patients require such well made products. The solution to this problem is a simple one. Each professional optometrist should arrange with either a dispensing optician, in towns large enough to support a dispenser, or with a local druggist in towns too small to support a dispenser, for this dealer to have on hand at all times an adequate supply of well made protection glasses. Patients interested in this subject should be given a note to the dealer suggesting that he show the patient these protection glasses, and the patient be requested to take this note to that particular place to have his or her needs satisfied. Opticians and druggists will be glad to cooperate with optometrists and in this way the patient is assured of getting well made protection glasses

which are free from defects which may in some way injure the eyes. The optometrist, too, is free from the stigma of entering into a frankly commercial venture with his patient.

A NEW PUPILLOMETER RULE

The need for accurate interpupillary measurements is obvious to all optometrists. This data is particularly important in lenses of some strength and in all bifocal corrections. The value to both the patient and the examiner of carefully taken monocular readings has already been presented to the profession by Ryer and Hotaling,[1] who, themselves, have developed an interpupillary rule which contained a number of unique and valuable features.

During the past month a new pupillometer rule has been developed by the *American Optical Company*. While this new rule is comparatively simple in construction, it incorporates a number of features which make its use much more accurate than the ordinary zylo millimeter rule now in use for the purpose of taking the interpupillary distance in many offices. This new rule consists of two calibrated surfaces, mounted together, both facing the examiner. The calibrations on these two surfaces are arranged so that a series of straight lines, indicating the exact measuring point, are formed on the two surfaces of the rule, when the instrument is properly held in place before and slightly below the eyes of the patient. The examiner must be in position, directly before the patient. The calibrations are so arranged on the pupillometer rule that the distance for each eye is measured independently from the center of the nose. This new instrument is claimed to be very accurate and is quite inexpensive.

PARTICIPATION IN A PUBLIC HEALTH PROGRAM

Discussions of nation wide public health programs are sure to bring out the question of, who will determine the exact scope of the program and who will decide which professions are to be delegated parts in whatever services are finely agreed upon. It is generally admitted that, when

[1] The interpupillary distance as the cornerstone of the optometric examination. E. LeRoy Ryer and Elmer E. Hotaling. American Journal of Optometry. Vol. 7, No. 7, pp. 385-395. 1930.

such programs reach the point that ocular work is included within their scope, the optometrists will be asked to serve in their professional capacity to assist in performing the necessary eye examinations. The question has been, whether or not our federal government would attempt to dictate the details of the program or leave the decisions on these matters to the various participating states.

In June of this year, apparently believing that this decision would be made in Washington, by congress, Dr. Leslie R. Burdette, President of the American Optometric Association, and Dr. Luther Dicus, Chairman of the Committee on National Affairs of that organization appeared before the United States Senate sub-committee on labor and education, to present a petition on behalf of optometry, to the effect that optometrists be included in whatever plans were agreed upon. The senate sub-committee was at that time considering the Wagner bill S-1620, and were holding public hearings at which representatives of a number of professional groups appeared.

It is now evident that while these optometric representatives made a very good impression at this hearing, that they were discussing a point which was outside of the intended scope of the legislation, which the senators, who were considering the bill were there to decide. As the writer has contended throughout the past nine months, the matter of specific policy making and carrying out the details of a public health program, would in the end, be left to the individual states and therefore the state itself would have the deciding voice in choosing the type of professional practitioners, who would actually do the work. A recent report from Washington does much to support the writer in his contention.

In August of this year, this senate sub-committee submitted to the United States Senate, a rather lengthy preliminary report dealing with the entire question of a public health program. This report points out that the sub-committee is in agreement with the general purpose of the Wagner bill, but suggests, however, that additional study be given its many provisions. This preliminary report touches on the question of participation in a health program by various professions, and answers the question which has been uppermost in the minds of many professional students of this problem.

On the question of the eligibility of practitioners from various schools of healing, the committee states that, it is impressed by the fact that the licensing and regulation of practitioners in medicine and all

allied fields have always been within the jurisdiction of the states and not under the federal government, and the committee feels that the powers should be left in the hands of the various states as it is at present and that therefore the bill should not include any specifications on these points except a provision to the effect that nothing in the bill should be construed as infringing on the authority of each state to continue to regulate the practice of the healing arts.

The question has therefore been answered. Each state must decide for itself whether or not to participate in a health program and if so, to what extent. Each individual state will also have to originate and supervise its own public health act, which will cover the scope of the state program as well as specify the practitioners, who will be called upon to carry out the needed phases of health work.

ANNOUNCING A NEW DEPARTMENT TO START IN THE NOVEMBER ISSUE

For many years optometry has been well served by the various makers of equipment, who have placed in the hands of optometrists, instruments of precision which have proven to be of great value in the technical development of refractive work. In fact, no little credit for the splendid progress which has been made in refractive science should go to these manufacturers, who have repeatedly stood by and patiently assisted in the development of some intricate piece of equipment in which there was some doubt as to its initial worth, but whose later use has become invaluable. To these manufacturers, optometry owes a debt of gratitude she will never fully repay, for without the assistance of their technical staffs, and the funds spent annually for research, much of this clinical development would have been impossible.

This work goes on continually and to assist in reporting the important activities in this field, the AMERICAN JOURNAL OF OPTOMETRY is happy to announce the creation of a new department or section which will appear monthly and which will be largely devoted to descriptions of new pieces of refracting equipment and discussions having to do with their use. This department, to be known as *Procedure and Instrumentation,* will be under the supervision of the optometrist G. L. DuPlessis of Minneapolis. This new Associate Editor will be remembered by readers of this journal as a well known writer on ocular matters, who has

been contributing to optometric literature for the past decade. At this time, we officially welcome Dr. DuPlessis to the Editorial Board of the journal and announce that his new department will appear for the first time in the November 1939 issue.

THE ADAPTOMETER AS A DIAGNOSTIC AID

During the latter part of last year the oculist, Feldman, of Philadelphia devised an instrument to be used for the clinical determination of that form of night blindness which was due to vitamin A deficiency. This instrument is known as an adaptometer. The technique used in making this test is to place the patient before the instrument in a dark room and then to pre-expose the patient's eyes for three minutes, after which the exposure light is turned off and the stimulus or test light is turned on. With the aid of a stop watch, the examiner determines the time elapsing until the patient sees and names correctly the direction of the test light. From 3½ to 5 minutes is considered normal. Before using the adaptometer, it is of course necessary to eliminate from consideration those cases which are suffering from night blindness due to some cause other than a vitamin A deficiency. This is done by means of a searching ophthalmoscopic examination and a detailed plotting of the visual fields. It is claimed by Feldman, that large numbers of patients have been examined by him with this new instrument with considerable success.

Equally satisfactory results were obtained with a similar technique in a Liverpool hospital,[1] wherein a series of tests were made on a patient who was suffering from night blindness due to a lack of vitamin A in his diet. This condition was relieved by concentrated doses of vitamin A.

This subject has also been considered by certain staff members of the Bureau of Home Economics of the United States Department of Agriculture.[2] This group suspected that persons, who habitually live on a low vitamin A diet may be causing many of our automobile accidents, particularly those which occur in the early evening or at night. The tests conducted by them indicated that this was true. Low vitamin A diets, it was found, not only cause night blindness, but also cause a constriction of the visual field, so that even in daylight persons on such diets do not

[1] Clinical tests show degrees of night blindness. Sight-Saving Review. Vol. IX. No. 1, p. 69, 1939.
[2] Vitamin A and accidents. Automobile Topics. Vol. CXXXII. No. 10, p. 363.

have normal fields of vision which are necessary to prevent them from cutting into cars running by their side, or to enable them to see cross traffic approaching at intersections. At night, such persons are less likely to see pedestrians walking at the side of the road. Common sources of vitamin A are yellow and leafy green vegetables, egg yolks, whole milk, orange and tomato juice. Five Bureau staff members took part in an experiment in which their diets contained all vitamins with the exception of vitamin A, the intake of the latter being kept as low as possible. The subjects neither lost or gained weight and appeared to be in good health throughout the experiment, except for the night blindness which developed to some degree in each of the participants.

Before starting this experimental diet, the eyes of each of the five staff members were tested, to determine their normal adaptability to darkness. This was done with an adaptometer. This instrument was also used, on those making the low vitamin A diet experiment, at regular intervals during the period in which the test was in progress. After slightly more than six weeks, the cases were returned to normal by being given specified amounts of cod liver oil.

The writer understands also that this instrument has been used with some success by the technical consultant of the Pasadena Police Department, who has been giving night blindness tests to certain California motorists.

On the other hand, these clinical findings are contested in the OPTICAL JOURNAL AND REVIEW, Vol. LXXVI, No. 4, p. 16, 1939, by Trimby, who submits the data compiled by Palmer, to refute, if possible, the claims of Feldman. These men feel that the clinical results of using the adaptometer and similar photometric techniques are too variable to enable a diagnosis of night blindness as a result of vitamin A deficiency, to be made from their findings. The writer also understands that one of the speakers at the recent meeting of the American Academy of Optometry had something to say against this form of diagnostic procedure. Optometrists will watch the results of this dispute with some interest, as the matter is an important one, and one in which the entire public has a stake.

CLINICAL EYE CAMERA

It is reported in the IOWA OPTOMETRIST, Vol. 17, No. 8, p. 6, that the *Riggs Optical Company* is now distributing a new clinical eye

camera recently introduced by the *Barnett Laboratories*. With the aid of this camera, optometrists will be able to take life size monocular or binocular photographs of the eye in either full color or in black and white. The advantage of this technique as an aid in keeping efficient records is obvious and the writer is safe in making the prediction that this new clinical camera will find a ready reception in the offices of many optometrists, who have frequently felt the need for such a device.

The camera used is of the focal plane shutter type and has an F:3.5 Graf lens. The camera uses either black and white film or a color film which may be secured in 18 or 36 exposure lengths. Special attachments are available for making partial face photographs and also it is claimed, for photo-microscopy.

Attached to the device, on either side of the camera are the lamps which are so wired as to operate independently of each other or in unison. When in operation, while the optometrist is adjusting the camera, a special two-way resistance coil keeps the lamps burning at a very low intensity, thus relieving the patient from any possible discomfort which might otherwise be caused from glare and also reduces the heat factor incidental to this type of work. When properly in focus and when the shutter release switch is pressed, a synchronizing switch also cuts out the resistance coils, allowing full current to reach the photoflood lamps, giving the necessary degree of maximum brilliancy at the moment of exposure. It is claimed that the unit is simple to operate and it is evident to the writer that this new photographing device will prove to be a valuable aid in optometric procedures.

THE OCULIST GOES TO SCHOOL

Dr. K. K. Eychaner, president of the Florida Optometric Association, is quoted in the ASSOCIATED JOURNAL OF OPTOMETRY, Vol. 4, No. 10, p. 8, as calling attention to the medical school of the University of Michigan, which, he claims, has established an elective course in ocular refraction and ophthalmoscopy. A course that is 15 hours in length. No doubt many medical students will take this course, and the writer presumes that at the end of this 15 hour period these men will present themselves to the public as qualified oculists, ready and fit to contrast their ability and skill with that of optometrists, who have completed years of vigorous schooling in the eye field in their colleges and university courses.

As far as the writer is aware, this new course in Michigan establishes a new educational speed-record in training oculists. The modern tendency within this medical group of eye examiners, seems to be to turn them out as fast as possible. Whether or not they know much of value about the eye when they finish, seems to be a secondary concern. Speed seems to be the major theme. For years, oculists have been rather noted for getting what knowledge they seem to possess of the eye, out of exceptionally short courses. Courses varying from a few weeks in length to a few months in length. The recently announced graduate course in ophthalmology at Columbia University, New York City,[1] is a fair example of this sort of thing. This course is advertised in the August 26, 1939 issue of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, as a course in ophthalmology, varying in length from four to sixteen weeks. This short course at Columbia is typical of the type of ocular and visual training many oculists have been receiving, but the "palm" certainly goes to the University of Michigan with its new 15 hour short course. If this specialized training were given on an 8 hour day basis, one cannot help but wonder what the embryo oculist would do with his free hour on the second day.

[1] In the same University optometrists are trained to do eye work. The Optometry Course is four years in duration.

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A REVIEW OF CERTAIN OCULAR CASES IN WHICH MYOPIA WAS OVERCORRECTED OR IN WHICH PSEUDO-MYOPIA WAS IMPROPERLY DIAGNOSED AS MYOPIA*

Myopia, or near-sightedness as it is sometimes referred to, is the refractive condition of an eye in which, when the accommodation is suspended, parallel rays of light come to a focus in front of the retina. It is a condition that always calls for correction and is caused when the antero-posterior axis of the eye is too long for its normal accommodative mechanism. As far as the patient is concerned myopia results in poor, or sub-normal, distance vision.

Accommodative myopia, or pseudo-myopia as it is usually referred to, is the refractive condition of an eye in which the accommodative mechanism is abnormal to the point of being over-active, thus bringing into focus parallel rays of light in front of the retina. This condition also results in poor, or sub-normal, distance vision.

*The second of a series of nine papers by Carel C. Koch, Opt.D., F.A.A.O., dealing with reported clinical findings. The third of this series will appear in the November issue of the AMERICAN JOURNAL OF OPTOMETRY.

Cases in which sub-normal distance vision is improved by means of concave or minus (—) lenses, may be cases of myopia, pseudo-myopia or a combination of both. From the viewpoint of the patient alone, it matters but little whether the sub-normal vision is the result of true myopia or pseudo-myopia. The patient is seeking assistance which will return the eyes as nearly as possible to normal.

From the standpoint of the refractionist, however, it matters much, whether or not the subnormal distance vision is the result of true myopia or pseudo-myopia. The true myope will readily and gratefully accept concave lenses, providing he is not overcorrected. His vision will return to normal, or near normal, and if the accommodative-convergence relationships are within certain well defined norms, and if the patient observes certain hygienic measures, the case will, in all probability, remain under control and the patient will report visual comfort. The pseudo-myope on the other hand, while accepting concave lenses, will do so only at a sacrifice of visual comfort. While concave lenses may improve the visual acuity of the pseudo-myope they are sure to further upset the already abnormal accommodative-convergence relationship, and their continued use will in time prove to be intolerable.

In cases of sub-normal vision wherein either myopia or pseudo-myopia is suspected, it is obvious that a correct diagnosis must needs be made, to determine the exact type of refractive disorder which must be corrected. A mistaken diagnosis will result in much visual discomfort and may produce conditions of serious consequence.

As was pointed out by the writer, in a previous report,[1] dealing with cases of hyperopia which had been undercorrected, optometrists are in an unusually fortunate position in being able to supply the exact type of ocular service demanded by the public. Their examination techniques are based upon sound scientific principles which in turn are being translated into clinical findings which give the patient the visual comfort required. This is not true, however, when certain refractive methods are employed. It is not true when homatropine, or what is popularly referred to as "drops," is used in making an ocular examination. A practice kept in vogue by certain oculists.

As the following case reports will show, the use of a cycloplegic or "drops" in an ocular examination, apparently, makes the diagnosis of

[1] A review of certain ocular cases in which hyperopia was undercorrected. Carel C. Koch. American Journal of Optometry. Vol. 16, No. 9, pp. 349-361. 1939.

myopia or pseudo-myopia more difficult and leads to perplexity in developing the final formula to be prescribed. The writer has shown[2] that the use of a homatropine cycloplegic or "drops" in the average eye examination is unscientific and leads to utter confusion, owing to the unreliability of the action of the drug upon the ciliary muscle.

The case reports, which follow, have been briefly rewritten or abstracted by the writer, but each report contains the salient points of the case under discussion. In every way these case reports substantiate, by means of clinical evidence, the previously offered technical material; which proved without question, the unreliability of ocular refractive findings, taken while the eye was under the effect of drugs.

The cases reported at this time are in two groups. First, cases of myopia which had been overcorrected, and second, cases of pseudo-myopia which had been mistakenly diagnosed as cases of myopia. These reported cases of myopia and pseudo-myopia were all originally examined by oculists, who, during the course of their examination, employed cycloplegics or "drops" to assist them in making their examinations. In each of these reported cases, the prescription given the patient, by the oculist, was unsatisfactory. In the myopic cases, the concave correction which was prescribed was in excess of the amount of myopia present. In the pseudo-myopic cases, which required no concave lenses, these were given with the obvious result of visual discomfort. These cases were then examined by optometrists, who without resorting to the use of drugs were able to properly diagnose the visual abnormality and prescribe lenses or orthoptic treatments to relieve the condition.

The following brief reviews of previously published myopic cases are but few of the many that could have been included in this report. All have been taken from established sources of technical literature, and all were originally written by competent eye specialists. The reports are from comparatively recent periods and assist in fully establishing the fact, that the use of "drops" or cycloplegics in cases of myopia fails to help the refractionist in arriving at the one proper formula which will correct the condition.

Case Report No. 21

Aronsfeld reports the following case in ARCHIVES OF OPTOMETRY. Vol. 2, No. 1, p. 50. Patient, male, age 59. Complained that his present

[2] An investigation as to the need for "drops" or cycloplegics in eye examinations. Carel C. Koch. American Journal of Optometry. Vol. 15, No. 1, pp. 17-38. 1938.

glasses "drew" his eyes. These glasses had been prescribed by an oculist and were as follows:

O.D. —3.50 D.Sph. ⌒ —1.00 D.Cyl. axis 45
O. S. —0.50 D.Sph. ⌒ —0.50 D.Cyl. axis 90

The optometrist, Aronsfeld, examined the case and prescribed the following correction which gave complete comfort.

O.D. —2.00 D.Sph.
O. S. +0.25 D.Sph. ⌒ —0.50 D.Cyl. axis 90

Case Report No. 22

Peckham reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 9, No. 5, p. 163. Patient, girl, age 12. An oculist, who had had the care of the child for a number of years, had told the patient's mother that each year the amount of myopia had increased, and that he was fearful of further increasing the strength of the minus corrective lenses, lest the very increase should tend to make matters worse. The patient was wearing the following correction:

O.D. —6.00 D.Sph. ⌒ +1.50 D.Cyl. axis 115
O. S. —6.00 D.Sph. ⌒ +2.00 D.Cyl. axis 75

With this correction in place her visual acuity was as follows: O.D. 20/50, O.S. 20/200. The optometrist, Peckham, assumed charge of the case at this point and in five years, using purely optometric techniques, so improved the general ocular condition of the patient that the following greatly reduced correction gave normal or 20/20 visual acuity in each eye.

O.D. —2.50 D.Sph. ⌒ +1.50 D.Cyl. axis 90
O. S. —2.50 D.Sph. ⌒ +2.00 D.Cyl. axis 90

Case Report No. 23

Schuler reports the following case in the REFRACTIONIST, Vol. 27, No. 491, p. 18. Patient, male, age 23. Patient wearing the following correction which was prescribed by an oculist under a cycloplegic, 11 months before.

O.D. —1.75 D.Sph.
O. S. —1.75 D.Sph.

The optometrist, Schuler, examined the case and found his uncorrected visual acuity to be O.D. 20/50, O.S. 20/60. Schuler prescribed the following correction which gave him normal vision and complete comfort:

O.D. —0.75 D.Sph.

O. S. —0.75 D.Sph.

Case Report No. 24

Marton reports the following case in the BRITISH JOURNAL OF PHYSIOLOGICAL OPTICS, Vol. 13, No. 1, pp. 21-32. Patient, female. Using the following correction that had been prescribed under a cycloplegic.

O.D. —3.50 D.Sph.
O. S. —3.50 D.Sph.

The optometrist, Marton, using the Graf Wiser techniques reduced the amount of myopia to the following which gave the patient 6/6 vision:

O.D. —2.50 D.Sph.
O. S. —2.50 D.Sph.

Case Report No. 25

Uhler reports the following case in the YEAR BOOK OF THE NEW YORK STATE OPTOMETRIC ASSOCIATION, 1933, p. 164-165. Patient, housewife, age 38. Complains of headaches. Had been examined by an oculist during the past year and was wearing the following correction:

O.D. —1.50 D.Sph. ⌒ —0.25 D.Cyl. axis 180
O. S. —2.50 D.Sph.

The optometrist, Uhler, prescribed orthoptic treatments and reduced the correction to the following and the patient had complete relief.

O.D. —0.75 D.Sph.
O. S. —1.00 D.Sph.

Case Report No. 26

Kurtz reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 4, No. 1, p. 17. Patient, male, age 28. School teacher. Unable to use eyes for near work. Had been under the care of an oculist for a number of years. His latest prescription from an examination under a cycloplegic was as follows:

O.D. —1.25 D.Sph. ⌒ —1.25 D.Cyl. axis 180
O. S. —2.00 D.Sph. ⌒ —0.50 D.Cyl. axis 15

This correction gave him no comfort when reading whatsoever. The optometrist, Kurtz, prescribed the following correction which enabled him to see at a distance in a normal manner as well as enabling him to read with comfort.

O.D. —0.50 D.Sph. ⌒ —1.25 D.Cyl. axis 180
O. S. —1.50 D.Sph.

Case Report No. 27

Morse-Peckham reports the following case in the CLINICAL REPORT OF THE OPTOMETRIC RESEARCH INSTITUTE, No. 1, p. 121, 1939. Patient, female, age 21. Has difficulty doing near work with the following correction which was prescribed by an oculist.

O.D. —2.75 D.Sph. ⌒ +0.50 D.Cyl. axis 90
O. S. —2.00 D.Sph. ⌒ +0.50 D.Cyl. axis 90

With the aid of a prismatic treatment correction the optometrist, Morse-Peckham, was able to reduce the final prescription given the patient to the following, which enabled her to have normal vision and do close work with comfort.

O.D. —2.00 D.Sph. ⌒ 2△ Base-In.
O. S. —1.25 D.Sph. ⌒ 2△ Base-In.

The following brief reviews of previously published pseudo-myopic cases are also but few of the many that could have been included in this report. Here too, all reports have been taken from established sources of technical literature, and all were originally written by competent eye specialists. The reports are from comparatively recent periods and assist in fully establishing the fact, that the use of "drops" or cycloplegics in cases of pseudo-myopia fails to help the examiner in arriving at the one proper diagnosis and technique which will correct the accommodative condition. It will be noted that in the final formulas which were prescribed for these cases, that no concave spherical lenses were used, and it will also be noted that in each case the patients' original symptoms were relieved.

Case Report No. 28

Peckham reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 4, No. 4, pp. 110-111. Patient, male, age 52. Patient had been wearing weak concave lenses which had been prescribed by an oculist. Was forced to give up desk work and had to resort to an out-of-door occupation. Suffered from chronic indigestion, blood pressure was very low and at times patient suffered from insomnia. He became depressed, irritable and at times really ugly. Several physicians had been consulted, with no response. At the suggestion of a third physician, medical treatment was started after an analysis of stools showed sepsis of a most pronounced character. At the suggestion of this last physician, the patient consulted the optometrist Peckham, who refracted the case. Instead of finding the patient somewhat near-sighted, the refraction dis-

closed a case of hyperopia accompanied by a convergence insufficiency. Orthoptic treatments and convex lenses were prescribed by Peckham. Patient at once began to sleep well, and his blood pressure slowly returned to normal. Six weeks after the optometric treatment was added to the medical treatments, stool analysis showed a marked improvement in biliary and starch digestion. From this point on, the patient showed an uneventful recovery.

Case Report No. 29

Kurtz reports the following case in the NORTHWEST JOURNAL OF OPTOMETRY, Vol. 1, No. 5, p. 88. Patient, male, age 14, had been refracted by an oculist at a General Hospital. The following correction had been supplied him:

O.D. —0.75 D.Cyl. axis 90
O. S. —1.00 D.Cyl. axis 90

Patient was unable to use this correction for more than a few moments without discomfort. The optometrist, Kurtz, prescribed a pair of +0.75 D.Sph., for all near point work, which gave the patient complete comfort.

Case Report No. 30

Koch reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 11, No. 5, pp. 161-162. Patient, boy, age 15, who complains of an inability to do near-point work with comfort, with his glasses in place. These glasses were prescribed by an oculist, who had diagnosed the case as one of myopia or near-sightedness and who had given him the following correction:

O.D. —1.00 D.Sph.
O. S. —1.00 D.Sph.

A diagnosis of false or pseudo-myopia was made by the optometrist, Koch, who removed the correction and with the aid of orthoptic treatments enabled the patient to have normal vision with comfort.

Case Report No. 31

Rakusen reports the following case in the OPTOMETRIC WEEKLY, Vol. 29, No. 41, p. 1198. Patient, male, age 27. Wearing the following correction that had been prescribed by an oculist and had been rechecked by him under a cycloplegic on several occasions.

O.D. —2.00 D.Sph.
O. S. —1.25 D.Sph. ⌒ —0.50 D.Cyl. axis 60

The optometrist, Rakusen, examined this case and decided this was a case of pseudo myopia. Orthoptic treatments were employed and in six months the patient's vision was normal and no glasses were required.

Case Report No. 32

Peckham reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 4, No. 4, p. 110. Patient, male, age 30. Apparently myopic, had been fitted under atropine with weak concave lenses by an oculist. A few weeks after obtaining these glasses, he began to suffer severe pains in the right abdomen. Two physicians diagnosed the case as appendicitis. A third physician felt dubious about this diagnosis and referred the patient to the optometrist, Peckham, who, by relaxing the convergence, was able to uncover a high hyperopia which he at once corrected. The patient had never had a recurrence of the symptoms.

Case Report No. 33

Oertel reports the following case in the AMERICAN JOURNAL OF OPTOMETRY, Vol. 10, No. 8, pp. 291-292. Patient, male, age 26. Patient suffering from a left convergent squint of considerable amount. His oculist had prescribed the following correction.

O.D. —1.00 D.Sph.
O. S. —1.25 D.Cyl. axis 145.

With these lenses his vision was as follows: O.D. 20/20, O.S. 20/140. The optometrist, Oertel, prescribed the following correction which gave him visual comfort, better vision and relieved entirely the squint, his eyes being straight within 24 hours after wearing the new correction.

O.D. +1.00 D.Sph.
O. S. +1.00 D.Cyl. axis 65.

The patient's visual acuity with the new correction was O.D. 20/20, O.S. 20/80+.

Case Report No. 34

Morse-Peckham reports the following case in the CLINICAL REPORT OF THE OPTOMETRIC RESEARCH INSTITUTE, No. 1, p. 120. 1939. Patient, male, age 21. Patient finds near work very difficult with the following correction which was prescribed by an oculist.

O.D. —0.75 D.Sph. ⌒ —0.75 D.Cyl. axis 180
O. S. —0.75 D.Sph. ⌒ —0.50 D.Cyl. axis 180

The optometrist, Morse-Peckham, with the aid of a temporary prismatic treatment correction, was able to bring out the hypermetropia which

was present in this case, and prescribed the following correction which gave the patient complete comfort and enabled him to do near work without fatigue.

O.D. +0.25 D.Sph. ⌒ +0.75 D.Cyl. axis 90 ⌒ 2△ Base-In.
O. S. +0.25 D.Sph. ⌒ +0.75 D.Cyl. axis 90 ⌒ 2△ Base-In.

Case Report No. 35

Bell reports the following case in the OPTOMETRIC WEEKLY, Vol. 30, No. 24, p. 671. Patient, girl, age 13. A year prior to consulting Bell, the patient had been examined by an oculist, who used "drops" or cycloplegics in the course of the examination. He had prescribed the following correction:

O.D. —2.00 D.Sph.
O. S. —2.00 D.Sph.

The patient then consulted the optometrist Bell, who prescribed orthoptic treatments. At the end of six weeks, the patient's uncorrected visual acuity was normal or 20/20, and the use of concave lenses was discontinued.

Case Report No. 36

Thoma reports the following case in Vol. 12, AMERICAN ACADEMY OF OPTOMETRY, p. 101-120, 1938. Patient, male, age 23. Had been examined under a cycloplegic by an oculist and was wearing the following correction:

O.D. —1.00 D.Sph.
O. S. —1.00 D.Sph.

He was suffering from headaches and near-point work was difficult. He felt his eyes were failing him. The optometrist, Thoma, examined this patient and prescribed orthoptic treatments and the following corrections which gave the patient normal vision and comfort.

Distance correction
O.D. —0.25 D.Sph.
O. S. —0.25 D.Sph.
Reading correction
O.D. +0.50 D.Sph.
O.D. +0.50 D.Sph.

Summary

In any proposed refractive procedure, there must be an objective to be reached. Something of value must be accomplished by putting into

practice the proposed technique. It has been suggested, and a limited number of oculists have put into practice the routine use of "drops" or cycloplegics in their day to day eye examining work. These men follow this practice in the hope that the work thus done will be accomplished in as thorough a manner as possible. They hope that by using homatropine as a cycloplegic, that in some way the findings of their various tests will become more accurate. In this, they are doomed to disappointment.

Evidence has already been presented which conclusively proves that the routine use of homatropine as a cycloplegic in ocular refractive work fails to give the examiner uniform results and without some fairly large degree of uniformity, these refractive findings of his accommodative tests taken while the eyes are under the effect of drugs, are meaningless. The clinical reports of a number of myopic cases and a number of pseudo-myopic cases, as presented in this paper, lend added emphasis to the technical experimental evidence previously offered.

Conclusions

1. The cases reviewed in this report indicate that optometrists regularly using as they do, customary examination procedures as universally employed in ocular examinations, are able, by means of these techniques, to prescribe for, and adequately correct both cases of myopia and pseudo-myopia.

2. The cases reviewed in this report, indicate that the use of cycloplegics or "drops" as used in ocular examinations in routine clinical practice by some oculists, fails in certain cases of myopia and pseudo-myopia to produce sufficient relaxation of the accommodative processes. This failure making it technically impossible for the examiner to prescribe suitable minimum corrections in cases of myopia or making a proper diagnosis impossible, thus removing the possibility of effective orthoptic treatments in cases of pseudo-myopia.

3. The cases reviewed in this report, indicate that the procedure employed by certain oculists in using cycloplegics or "drops" in ocular examinations does not make for infallibility of refractive examination techniques, and should be discontinued.

Carel C. Koch

SPECIAL REPORTS

STUDIES IN TYPOGRAPHY BY TINKER AND PATERSON*

G. L. DuPlessis, Opt.D.
Minneapolis, Minn.

During the ten year period, from August, 1928 to August, 1938, Dr. Miles A. Tinker and Dr. D. G. Paterson of the psychology department of the University of Minnesota have been carrying on a series of studies having to do with typography and its effect upon the speed of reading. The findings of this research work have appeared in various articles by these workers in the JOURNAL OF APPLIED PSYCHOLOGY.

Some of this work had been done previously by other investigators, but many of the findings were inconclusive because of lack of controls. The subject material used by Tinker and Paterson were forms A and B of the Chapman-Cook Speed of Reading Tests printed in various types and typographical arrangements. Their conclusions are here given briefly, each paragraph being a resume of one paper.

1. Text printed in capitals is less legible than material in lower case and decreases the speed of reading markedly. The same is true of italics, although to a lesser extent.

2. The size of type also influences speed of reading. The best size being found to be 10 point type.

3. The ideal length of line for 10 point type was found to be 80 millimeters.

4. The two forms used in these tests are equivalent in reading speed only on the first trial. Familiarity with their use changes their equivalence so that the tests are not validated.

5. 10 point type in an 80 millimeter line seems the most desirable arrangement, but slight departures either way such as smaller type and shorter lines do not effect speed of reading until a much smaller type is used.

6. It was determined that black type on white paper is relatively easier to read than white type on black paper. The advantage being about 10%.

7. Color combination studies have shown that those combinations

*Submitted for publication August 6, 1939.

producing the greatest brightness difference as suggested by Luckiesh provide maximum legibility.

8. The ideal leading or spacing between lines was found to be two points. One point leading producing no greater speed than solid text.

9. Another test was the effect on legibility of reduction in size of news print. It was found that a reduction to half size may be made without considerable loss of legibility, but beyond that, legibility decreases rapidly.

10. The style of type was investigated and it was found that no important difference in speed of reading were produced by the commonly used type faces.

11. Mental set or familiarity with a certain type does not produce considerable differences in various commonly employed types.

12. Slight difference in color and marked differences in gloss of paper do not influence speed of reading.

13. This one paper is a defense of the validity of the method employed. The claim is made that the use of control groups answers that criticism.

14. Tests were made to analyze readers' estimates of marginal space in books. The average estimate was that 75% is text, 25% margin.

The conclusion is that this is an optical illusion as the printing industry follows the tradition of 50% text, and 50% white space.

The series of articles confirms points which had already been determined experimentally. According to the authors, doubt existed as to the validity of these findings and their analytical method has removed these doubts. Other conclusions were invalidated and gave rise to new concepts. Some of the work is said, by the authors, to be incomplete and subject to further study.

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* * * * *

INQUIRY AND EXPLANATORY NOTES

Through this department answers to technical questions dealing with orthoptic or refractive problems will be presented. These answers here published have been prepared by competent experts. Inquiries on postal cards and anonymous communications will not be noticed.

VISUAL SURVEYS IN SCHOOLS

To the Editor: Last year I conducted a one man visual survey for a nearby school. As all work was conducted in my office, under ideal conditions I was able to do what I believed to be a thorough job. This routine will be impossible now and the work will have to be done under less favorable working conditions. Please advise a simple yet satisfactory routine that would apply for Grades 1 through 9. Any help would be greatly appreciated.

M. E. L., West Warwick, R. I.

Answer: In making visual surveys of school children it is not necessary, as a rule, to do too much, but rather to build your survey routine in such manner that at least 35 to 40 children can be handled each hour. It is assumed that you are going to do the work yourself with the outside assistance of perhaps a teacher. If this is the case, it is suggested that you (1) record the uncorrected visual acuity, using for this, the letter E in various positions, particularly for the students in the lower grades. It is next suggested that you (2) make a quick static skiametric test to weed out those with considerable amounts of hyperopia. This can easily be done by putting a trial frame containing a pair of +1.50D.Sph. before the eyes of the student. The student fixing infinity while you "scope" him at 26 inches. This test will quickly pick out the students with hyperopia, while the visual acuity test will pick out the cases of astigmatism and myopia. It is then suggested that you (3) finish the survey with a rapid but thorough external ocular inspection, using a loupe and a strong light. Children are more apt to suffer from lid abnormalities and infectious eye diseases than from internal ocular involvements, so in a fast moving survey of this kind you could skip the ophthalmoscopic examination of the interior of the eye as this takes considerable time. Much indeed, could be added to the above, but good sound work can be done by carrying out a survey in the manner outlined above.

BOOK NOTICES

AN ANALYSIS OF PRISMATIC EFFECTS IN BIFOCAL LENSES. Paul Boeder, Ph.D. Published by the American Optical Company, Southbridge, Mass. 111. 1939.

This book attempts to resolve all computations involved in analyzing and correcting undesirable prismatic effects of bifocals to chart form. It discusses briefly object displacements and "image jump," as well as the calculations involved in determining these in anisometropic corrections. A chapter is devoted to the correct decentration of bifocal segments and a chart is supplied for determining bifocal insets according to the pupillary distance, the reading distance and the cylindrical element of the lens. The chief feature of the book is that it supplies and explains the use of two charts:

1. "The Prismograph"—a clever chart to determine the prismatic power at any point, of any cylinder and at any axis.

2. "Bifocal selection chart"—which points to the most desirable bifocal to use according to the distance correction and the addition and also gives the approximate location of the reading center with respect to the distance optical center. These two charts are original and do the work. The book, however, while beautifully printed and bound cannot be said to be complete, as it deals only with those bifocals distributed by the American Optical Company, and ignores compensation of anisometropic cases by using dissimilar segments or by slabbing off. The only compensating method mentioned is that of incorporating prism in the segment such as is done in the Panoptik bifocal. To the users of their bifocals, this company has provided in the book and charts a quick method of determining bifocal prismatic effects and the amount of correction needed. G. L. DuP.

* * * * *

SURGERY OF THE EYE. Mayer Weiner, M.D., and Bennett Y. Alvis, M.D., both of the Washington University School of Medicine at St. Louis. Published by the W. B. Saunders Company, Philadelphia, Pa. 396 illustrations. 445 pages. Cloth. $8.50. 1939.

This is a well written text book which will supply to the surgeon

a quick and handy reference on all matters as they pertain to the surgical correction of ocular defects and disease. The writers have not attempted to include every known operation for every condition but have included one or more successful surgical techniques for every ocular condition which may call for surgical intervention. The book is particularly well illustrated. T.O.B.

* * * * *

TOWARD PROFICIENT READING. James Alexander Hamilton. Published by the Saunders Press, Claremont, Calif. 152 pages, Illustrated. Cloth $2. 1939.

The book by Hamilton presents a clinical approach to the problem of reading effiiciency. It deals with the diagnosis and training of those persons whose reading abilities are sub-normal and does this in a concise and readable manner. The author touches on eye-movement photography and goes into considerable detail giving the reader the exact training procedures he recommends. The methods suggested are suitable for both elementary and high school students. T. O. B.

* * * * *

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